arrangement **** thing according to the property of TFT demanded -- it carries out and is formed in various magnitude, such as 28micrometerx30micrometer and 45micrometerx63micrometer. Therefore, ** is enlarged about 1 to 20% rather than the same magnitude or it according to the magnitude of each island-shape semi-conductor layer outside the 1st insulator layer 103 and 104. Moreover, to the main front face of a glass substrate, the include angle of the side attachment wall in the end face of the 1st insulator layer 103 and 104 secures the membranous step or membranous BAREJI which carries out taper etching and which carries out a laminating on this so that it may become less than 40 degrees 10 degrees or more.

[0049] Furthermore, SiH4 and the 2nd insulating layer 105 which consists of the oxidation silicon nitride film produced from N2O are formed by the plasma-CVD method. A content oxygen density is less than [more than 55atomic%65atomic%], and it is made, as for the presentation of an oxidation silicon nitride film, for direct stress not to attain to the semi-conductor layer which content nitrogen concentration makes reduce internal stress as less than [more than 1atomic%20atomic%], and is formed on this. The 2nd insulator layer is formed by the thickness of 10-200nm (preferably 20-100nm). The 2nd insulating layer is also omissible as the operation gestalt 1 shows.

[0050] Next, the semi-conductor layer which has amorphous structure by the thickness of 25-80nm (preferably 30-60nm) is formed by well-known approaches, such as a plasma-CVD method and a spatter. For example, an amorphous silicone film is formed in the thickness of 55nm by the plasma-CVD method. As semi-conductor film which has amorphous structure, there are amorphous semiconductor film and microcrystal semi-conductor film, and the compound semiconductor film which has the amorphous structure of the amorphous silicon germanium film etc. may be applied. Moreover, the 2nd insulating layer and amorphous semiconductor layer may carry out continuation formation of both among substrate layers.

[0051] And one which was indicated in the operation gestalten 1-3 of approaches is chosen, the crystalline substance semi-conductor film (here crystalline substance silicone film) is formed, etching processing is carried out and the island-shape semi-conductor layers 107 and 108a are formed. Etching processing was performed by the dry etching method, and the mixed gas of CF4 and O2 was used. The island-shape semi-conductor layers 107 and 108a are able to consist of respectively single crystal grain, and what carried out pattern formation by etching was able to consider substantially that they were single crystals. Then, the mask layer 109 by the oxidation silicone film with a thickness of 50-100nm is formed by the plasma-CVD method, the reduced pressure CVD method, or the spatter. For example, when based on a plasma-CVD method, mix orthosilicic acid tetraethyl (Tetraethyl Ortho silicate:TEOS) and O2, consider as the reaction pressure of 40Pa, and the substrate temperature of 300-400 degrees C, it is made to discharge by 2 0.5-0.8W [/cm] RF (13.56MHz) power flux density, and 100-150nm is typically formed in the thickness of 130nm.

[0052] Drawing 7 (A) shows the plan in drawing 5 (A). A mask layer and the 1st and 2nd insulator layers omit and express with drawing 7 (A). As the island-shape semi-conductor layers 107 and 108b lap with the 1st insulator layer 103 and 104 by which pattern formation was carried out to island shape, respectively, they are prepared in it. In drawing 7 (A), the A-A' cross section supports the cross-section structure in drawing 5 (A).

[0053] And as shown in drawing 5 (B), the photoresist mask 110 is formed and the impurity element which gives p mold to island-shape semi-conductor layer 108a which forms the n channel mold TFT by 1x1016 - about three 5x1017 atoms/cm concentration in order to control a threshold electrical potential difference is added. The element of the 13th group of the periodic table, such as boron (B), aluminum (aluminum), and a gallium (Ga), is known by the impurity element which gives p mold to a semi-conductor. Here, boron (B) was added using diboron hexahydride (B-2 H6) by the ion doping method. Even if boron (B) addition is not necessarily required and it omits, it does not interfere, but semi-conductor layer 108b which added boron (B) can be formed in order to store the threshold electrical potential difference of the n channel mold TFT within the limits of predetermined.

[0054] In order to form the LDD field of the n channel mold TFT, the impurity element which gives n mold is alternatively added to island-shape semi-conductor layer 108b. Elements of the 15th group of the periodic table, such as Lynn (P), arsenic (As), and antimony (Sb), are known by the impurity element which gives n mold to a semi-conductor. The photoresist mask 111 was formed and the ion doping method using phosphoretted hydrogen (PH3) was applied that Lynn (P) should be added here. Let Lynn (P) concentration in the impurity range 112 formed be the range of 2x1016 - 5x1019 atoms/cm3 (drawing 5 (C)). In this specification, the concentration of the impurity element which gives n mold contained in an impurity range 112 is expressed as